



IN THE US PATENT AND TRADEMARK OFFICE

December 12, 2002

#8/Response  
Ross  
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GROUP 3600

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Applicants : David K. BIDNER et al.

For : VEHICLE DRIVE CONTROL FOR 4X4 MODE

Serial No. : 09/775 279

Group: 3661

Filed : Feb. 1, 2001

Ex.: D. Tran

Confirmation No. 8275

Assistant Commissioner for Patents

Washington, D.C. 20231

RESPONSE TO OFFICE ACTION

Dear Sir:

This Response is offered in reply to Office Action mailed Aug. 14, 2002. A petition and fee for a one month time extension are enclosed.

In paragraph 3 of the office action, claim 7 is rejected under 35 USC 102(b) in view of the Hara et al. US Patent 5 819 194 (Hara patent). Applicants disagree with this rejection.

In particular, the Hara patent provides a system for avoiding "shock" to a motor vehicle during vehicle turning while cruising in the direct-coupled four wheel drive mode. The vehicle includes a transmission with a variable-torque clutch to control distribution of torque between the front wheels and the rear wheels. In the event a changeover switch 87 is moved in a short time span from a direct-coupled four wheel drive mode to a two-wheel drive mode during turning, the system distributes traction between the front wheels and rear wheels in an intermediate auto four-wheel drive mode until a predetermined time elapses without shifting to the two-wheel drive mode (column 13, lines 1-21). Friction plate 66b and friction disc 66d of the friction clutch 66 function during the switching time in the auto four-wheel drive mode to dissipate by slippage "unliberated torque" in a manner to reduce shock to the vehicle during the changeover (e.g. column 2, lines 1-15 and column 13, lines 1-21).

On page 2, paragraph 3 of the office action, the examiner refers to column 35, lines 7-50 as apparently disclosing features of claim 7. However, the examiner will note that column 35, lines 7-50 describes operation of a high/low speed changeover device 464 (a mechanical gear arrangement) and, in particular, movement of its shift sleeve 464b on output shaft 444 relative to gears to a high speed (H) position, low speed (L) position, or neutral (N) position in accordance with a setting of switches 491, 492, or 493. The features of claim 7 are not disclosed whatsoever at column 35, lines 7-50 of the Hara patent.

The examiner also refers to columns 41-42, lines 36-31 of the Hara patent where microcomputer 407 is described. Applicants note that column 42, line 32 through column 45, line 11 describe operation of the system using microcomputer 407 to provide traction distribution control of the friction clutch 466 pursuant to Figure 35. The memory tables shown in Figures 36, 37, and 38 relate to front wheel transmission torque to be applied, clutch pressure, and duty ratio. Not one of the memory tables of Figures 36-38 of the Hara patent involves a calibration table stored in system memory and indicating a relationship of torque output as a function of accelerator pedal position and a speed parameter for reducing sensitivity of torque output to accelerator pedal position in a 4X4 low mode of operation as set forth in claim 7.

Reconsideration of the Section 102(b) rejection of claim 7 is requested.

In paragraph 5 of the office action, claims 1-2 and 5 are rejected under 35 USC 103(a) in view of the Nakayama et al. US Patent 5 262 950 (Nakayama patent) taken with the Hara patent. Applicants disagree with this rejection.

In particular, the Nakayama patent provides a system having a torque distribution controller 16 that controls an engine controller 15 and a brake controller 10 for wheels 6, 7, 8, 9 of the vehicle in a manner to control torque distribution in what is called a longitudinal torque distribution manner and also in lateral torque distribution manner during turning of the vehicle. The Nakayama system functions to decrease torque distribution for the wheels having the greater slip rate and increase the torque distribution for the wheels having the smaller slip rate as expressly taught at column 12, lines 7-11 of the Nakayama patent. The portions of the Nakayama patent cited by the examiner on page 3, paragraph 5 of the office action discuss how the system controls the torque distribution for the wheels.

The Nakayama patent does not disclose or suggest Applicants' claim 1 reciting a method for controlling a vehicle drive having a 4X4 mode of operation and other modes of operation using an electronic control system providing a torque output in response to driver demand, comprising the steps of a) controlling torque output of one of an engine and transmission of the vehicle when the vehicle is in the 4X4 mode using a calibration table stored in system memory and indicating a relationship of torque output as a function of accelerator pedal position and a speed parameter for reducing sensitivity of the torque output to accelerator pedal position in the 4X4 mode of operation and b) controlling torque output of one of the engine and the transmission of the vehicle when the vehicle is in one of the other modes of operation using a different calibration table stored in system memory and indicating a different relationship of torque output as a function of the accelerator pedal position and the speed parameter.

These steps simply are not disclosed or suggested in the Nakayama patent. Similarly, the features of claims 2 and 5 for use in controlling torque output when the vehicle is in the 4X4 mode are not disclosed or suggested by the Nakayama patent.

The examiner cites the Hara patent to make up for the deficiencies of the Nakayama patent. However, as discussed above, the Hara patent provides a system for avoiding "shock" to a motor vehicle during vehicle turning while cruising in the direct-coupled four wheel drive mode in the event a changeover switch 87 is switched from a direct-coupled four wheel drive mode to a two-wheel drive mode. The Hara patent does not disclose or suggest the features of Applicants claims 1-2 and 5 and does not make up for the deficiencies of the Nakayama patent. The examiner's statement at the bottom of page 3 regarding the disclosure of the Hara patent is in error as will now be apparent from the above discussion regarding that patent.

In paragraph 6 of the office action, claim 3 is rejected under 35 USC 103(a) in view of the Nakayama et al. US Patent 5 262 950 (Nakayama patent) taken with the Hara patent and the additional Shiraishi US Patent 6 158 303 (Shiraishi patent). Applicants disagree with this rejection.

The gross deficiencies of the Nakayama patent and Hara patent are discussed above. The Shiraishi patent fails utterly to disclose or suggest the features of claim 3 for use in controlling torque output when the vehicle is in a 4X4 mode and similarly fails to make up for the gross deficiencies of the Nakayama patent and the Hara patent.


In paragraph 7 of the office action, claim 6 is rejected under 35 USC 103(a) in view of the Nakayama et al. US Patent 5 262 950 (Nakayama patent) taken with the Hara patent and the additional Rodrigues et al. US Patent 6 213 242 (Rodrigues patent). Applicants disagree with this rejection.

The gross deficiencies of the Nakayama patent and the Hara patent are discussed above. The Rodrigues patent fails utterly to disclose or suggest the features of claim 6 for use in controlling torque output when the vehicle is in the 4X4 mode. As mentioned in Applicants' previous Response To First Office Action, the Rodrigues patent employs an electromagnetic transfer clutch 42 that controls proportion of torque transmitted to the front wheels 10 relative to the rear wheels 12 in response to duty cycle selected from look-up tables. The Rodrigues patent fails to make up for the gross deficiencies of the Nakayama patent and the Hara patent pointed out above.

Reconsideration of the rejection of claims 8-10 and 12 is requested for the same reasons as set forth above.

Allowance of the pending claims is requested.

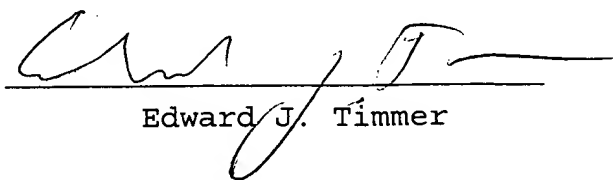
Respectfully submitted,

  
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CERTIFICATE OF MAILING

I hereby certify that this correspondence and enclosures are being deposited with the United States Postal Service under 37 CFR 1.8 as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on December 13, 2002.

  
Edward J. Timmer